

## Appendix 1: General Server Program Node-Identification Algorithm

1  
2  
3 if (local database contained a previous NIC address)  
4 {  
5 if (central DB has node with same current and previous NIC addresses)  
6 {  
7 //  
8 // Central database already aware of the NIC change  
9 //  
10 Audit as existing node.  
11 }  
12 else if (central DB has node with same previous NIC address and same bios date)  
13 {  
14 //  
15 // NIC change or NIC swap since last audit; follow local database  
16 //  
17 Audit as existing node.  
18 Update central database with new NIC address.  
19 }  
20 else if (central DB has a node with same current address and same bios date)  
21 {  
22 //  
23 // HDD swap, local database is from another node; follow current NIC instead  
24 //  
25 Audit as existing node.  
26 }  
27 else  
28 {  
29 Insert as new node.  
30 }  
31 }  
32 else  
33 {  
34 //  
35 // No local database found on the node  
36 //  
37 if (central DB has a node with same current NIC address and same bios date)  
38 {  
39 //  
40 // Local database lost; follow current NIC  
41 //  
42 Audit as existing node.  
43 }  
44 else  
45 {  
46 //  
47 // Node has not been audited before  
48 //  
49 Insert as new node.  
50 }  
51 }  
52 }

## Appendix 2: Start-to-Finish Audit Algorithm

1  
2  
3  
4 \*\*\*\*AGENT\*\*\*\*  
5  
6 Try to detect the node's 'OEM serial number'...  
7 \* Compaq BIOS call  
8 \* DMI call  
9  
10 Search for INI file(s) written during previous audit.  
11 if (any INI files found)  
12 {  
13 Retrieve 'former NIC address' as it was during the previous audit.  
14 Note: INI files are timestamped so that we know which one is newer.  
15 }  
16  
17 Try to detect 'current NIC address'...  
18 \* IPX via Winsock  
19 \* direct IPX call  
20 \* NetBIOS call  
21 \* VINES call  
22 \* request GUID from Windows  
23 \* search Windows registry  
24 \* ask local Novell server  
25  
26 if (no 'current NIC address' detected or found from previous audit)  
27 {  
28 if (one or more local fixed disks are available to hold INI files)  
29 {  
30 Generate a random 'current NIC address' for use until the real NIC address is detected.  
31 }  
32 }  
33  
34 Create a "audit start request" message, containing (among other things):  
35 \* current NIC address (or the temporary address if none)  
36 \* former NIC address (from INI file, if any)  
37 \* OEM serial number (if any)  
38  
39 Send the "audit start request" message to the server.  
40  
41 \*\*\*\*SERVER\*\*\*\*  
42  
43 Try to detect the node's NIC address from inside the server, by examining the node's NetWare  
44 connection.  
45 if (success)  
46 {  
47 Discard the agent-detected 'current NIC address' in favor of that detected in the server.  
48 }  
49  
50 Identify the node...  
51 {  
52 if (auditing a NetWare file server)  
53 {

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54         if (database has a file-server node with the same name)
55         { // A server-node is identified strictly by its node-name, as opposed to the
56           // by its OEM serial no. or /NIC-address. This is because where file-servers
57           // are concerned, the name *is* a unique identifier.
58         }
59     }
60     else
61     {
62         //
63         // Auditing a regular workstation
64         //
65         if (OEM serial number at least five characters long was detected)
66         {
67             if (OEM serial found in database)
68             {
69                 Audit as existing node.
70             }
71         }
72         else if (NIC address available)
73         {
74             if (hidden files contained a previous node address)
75             {
76                 if (database has a node with same current and previous address)
77                 {
78                     //
79                     // Servers are already aware of the NIC change
80                     //
81                     Audit as existing node.
82                 }
83                 else if (database has a node with same previous address and same bios date)
84                 {
85                     //
86                     // NIC change or NIC swap since last audit; follow hidden files
87                     //
88                     Audit as existing node.
89                     Update node address.
90                 }
91                 else if (database has a node with same current address and same bios date)
92                 {
93                     //
94                     // HDD swap; follow current NIC
95                     //
96                     Audit as existing node.
97                 }
98             }
99             else
100             {
101                 Insert as new node.
102             }
103         }
104         else
105         {
106             //
107             // No hidden files found
108             //

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108         if (database has a node with same current address and same bios date)
109             {
110                 //
111                 // HDD reformat and ini files lost; follow NIC
112                 //
113                 Audit as existing node.
114             }
115         else
116             {
117                 //
118                 // Node has not been audited before
119                 //
120                 Insert as new node.
121             }
122     }
123 }
124 else
125 {
126     //
127     // No NIC, no local fixed drives; must be a lonely audit
128     // Here, the console must inject a node address into the rawfile
129     // before uploading it, unless the rawfile
130     // is to be identified by node-name only (a risky venture)
131     //
132 }
133 }
134 }
135
136 Send an "audit start reply" message back to the agent.
137     * The message includes the node's server-detected NIC address, if any.
138
139 ****AGENT****
140
141 Receive the "audit start reply" message from server.
142
143 if ("audit start reply" message contains a 'current NIC address' as detected by the server)
144 {
145     Discard any agent-determined 'current NIC address'
146     in favor of the server-determined 'current NIC address'.
147 }
148
149 if (one or more local fixed disks are available to hold INI files)
150 {
151     if (any INI files found)
152     {
153         if (INI file 'current NIC address' is different from the new 'current NIC address')
154         {
155             Retire INI file 'current NIC address' slot to the 'former NIC address' slot.
156             Record 'current NIC address' to the INI file 'current NIC address' slot.
157             Refresh INI file(s) with the current date and time.
158         }
159     }
160     else
161     {
162         The NIC address(es) recorded in the INI file(s) are still accurate.

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### Appendix 3: Fake NIC Address Generation Algorithm

1  
2  
3 void GenerateFakeNICAddress(U8 address[6])  
4 {  
5 //  
6 // Create a random NIC address for temporary use by a node that  
7 // cannot currently detect its own NIC address  
8 //  
9 // First three digits are our NIC address block, also known as  
10 // the ethernet vendor code.  
11 // 00-90-D4 is NETInventory's official address block as  
12 // assigned by IEEE on 06/24/1998.  
13 //  
14 address[0] = 0x00;  
15 address[1] = 0x90;  
16 address[2] = 0xD4;  
17 //  
18 // seed random number generator  
19 //  
20 srand((unsigned int)(time(NULL)));  
21 //  
22 // last three bytes of NIC address are random digits  
23 //  
24 address[3] = (U8)(rand() % 256);  
25 address[4] = (U8)(rand() % 256);  
26 address[5] = (U8)(rand() % 256);  
27 }  
28